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(54) **CASTABLE THREE-DIMENSIONAL STATIONARY PHASE FOR ELECTRIC FIELD-DRIVEN APPLICATIONS**

(75) Inventors: **Timothy J. Shepodd**, Livermore, CA (US); **Leroy Whinnery, Jr.**, Danville, CA (US); **William R. Even, Jr.**, Livermore, CA (US)

(73) Assignee: **Sandia Corporation**, Livermore, CA (US)

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Related U.S. Application Data

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F04F 11/00 (2006.01)

(52) **U.S. Cl.** **204/600**; 204/450

(58) **Field of Classification Search** 204/600, 204/601, 605, 450, 451, 455
See application file for complete search history.

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Primary Examiner—Kaj K Olsen
(74) *Attorney, Agent, or Firm*—Donald A. Nissen

(57) **ABSTRACT**

A polymer material useful as the porous dielectric medium for microfluidic devices generally and electrokinetic pumps in particular. The polymer material is produced from an inverse (water-in-oil) emulsion that creates a 3-dimensional network characterized by small pores and high internal volume, characteristics that are particularly desirable for the dielectric medium for electrokinetic pumps. Further, the material can be cast-to-shape inside a microchannel. The use of bifunctional monomers provides for charge density within the polymer structure sufficient to support electroosmotic flow. The 3-dimensional polymeric material can also be covalently bound to the channel walls thereby making it suitable for high-pressure applications.

1 Claim, 1 Drawing Sheet